

WHAT IS CLAIMED IS:

1 1. A light curtain generating device, comprising a light emitting
2 pillar assembly accommodating an array of light emitting units within a
3 pillar case and a light receiving pillar assembly accommodating an array of
4 light receiving units within a pillar case, the light emitting pillar assembly
5 and light receiving pillar assembly being placed opposite to each other so
6 as to form a light curtain for detecting an object between the pillar
7 assemblies, characterized in that:

8 the light emitting unit array and light receiving unit array
9 accommodated in the respective pillar cases each comprise a group of
10 single-beam optical modules.

11 2. A light curtain generating device according to claim 1,
12 wherein each opposing pair of a light emitting unit and a light receiving
13 unit perform a detecting action in a prescribed order.

14 3. A light curtain generating device according to claim 1,
15 wherein each single-beam optical module consists of a light emitting unit
16 or a light receiving unit comprising a lens, an optical element and a holder
17 integrally incorporated with them so as to align them with a prescribed
18 optical axial line.

19 4. A light curtain generating device according to claim 3,
20 wherein the holder is made of plastic material.

21 5. A light curtain generating device according to claim 4,
22 wherein the lens and optical element are jointed to the plastic holder by
23 snap fit arrangements.

24 6. A light curtain generating device according to claim 1,
25 wherein each group of single-beam optical modules comprises an optical
26 module block including a plurality of single-beam optical modules arranged
27 in a single row by being attached to a metallic plate having a prescribed
28 length.

29 7. A light curtain generating device according to claim 6,
30 wherein each single-beam optical module forming the optical module
31 block is attached to the metallic plate at a side of the single-beam optical
32 module extending in parallel with the optical axial line.

33 8. A light curtain generating device according to claim 7,
34 wherein each single-beam optical module forming the optical module
35 block is attached to the metallic plate by a snap fit arrangement.

36 9. A light curtain generating device according to claim 3,
37 further comprising a circuit board having a plurality of optical element
38 mountable positions, and signal processing means for electrically and
39 selectively disabling the optical element mountable positions.

40 10. A light curtain generating device according to claim 1,
41 wherein each pillar assembly comprises a base frame defining mounting
42 positions for single-beam optical modules, and a plurality of single-beam
43 optical modules mounted in the mounting positions of the base frame.

44 11. A light curtain generating device according to claim 10,
45 wherein the base frame consists of a metallic plate member.

46 12. A light curtain generating device according to claim 10,
47 wherein at least one of the mounting positions is devoid of a single-beam
48 optical module.

49 13. A light curtain generating device according to claim 1,
50 wherein each pillar assembly comprises at least two base frames arranged
51 in series along a length of the pillar assembly each defining mounting
52 positions for single-beam optical modules, and a plurality of single-beam
53 optical modules mounted in the mounting positions of the base frames.

54 14. A light curtain generating device according to claim 13,
55 wherein the mounting positions of the two base frames have different
56 pitches.

57 15. A light curtain generating device according to claim 14,
58 wherein the two base frames have different numbers of mounting
59 positions.

60 16. A light curtain generating device according to claim 14,
61 wherein the two base frames have different lengths.

62 17. A light curtain generating device according to claim 14,
63 wherein the base frames consist of metallic plate members.